

Histopathological study of malignant melanoma in highlanders

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Abstract

Background: Malignant melanoma is a fatal skin cancer that is curable when detected and treated early. Recent reports indicate a rising incidence globally. This study aims at identifying the pattern of this neoplasm in Jos a geographical highland area.

Methods: The histology records of patients diagnosed as cases of malignant melanoma in the pathology laboratory of Jos University Teaching Hospital over a 10-year period (1989 - 1998) were retrospectively reviewed.

Results: Sixty-eight cases of melanoma were recorded comprising of 38 males and 30 females with a male to female ratio of 1.3:1 and a mean age of 50.4 years. Fifty-nine patients (82.4%) presented with foot lesions, six (8.8%) with groin lesions and 2 (2.9%) each with upper limb and conjunctival lesions. The vulva and oral mucosa were affected in 1.5% each of cases. The overwhelming majority (95.6%) were histologically nodular melanomas and 69.1% of the patients presented with stage V Clark's level of invasion.

Conclusion: The pattern of melanoma in Jos conforms to the usual pattern seen in Black and Asian populations. Health education may lead to a future decline in the morbidity and mortality associated with the condition.

Key words: Malignant melanoma

Introduction

Skin cancers are common worldwide, and reports indicate an increasing incidence. A recent report showed that skin cancer predominantly squamous cell carcinoma and basal cell carcinoma, accounted for 40% of all cancers in the United States of America.¹

Malignant melanoma, the most common fatal skin cancer worldwide, arises from melanocytes, which are of

neural crest origin. Once considered a uniformly deadly neoplasm, significant reductions in mortality have occurred due to earlier recognition and treatment of suspicious lesions.² Despite the declining mortality trend, the frequency of malignant melanoma has increased by a factor of approximately 15 in the past sixty years with the greater proportion being observed among white populations who show the highest incidence of the highest incidence of the disease.^{1 - 3}

The incidence of melanoma among whites is inversely related to latitude of residence being highest in the lightly coloured Celtic people of Australia, indicating a positive correlation with sun exposure⁴. Low rates occur in Asian and Black populations who account for 20% of cases globally with lesions arising in sites not exposed to the sun and hence are not clearly associated with sunlight. But in spite of these variations in incidence among nations or racial groups, increases in incidence have been noted almost universally.³⁻⁵

The factors underlying the increase in incidence are incompletely understood, but they have been ascribed to the independent risk factor of increased sun exposure. Epidemiological evidence implicating sun exposure is compelling in view of the known DNA damaging effect of ultraviolet light with induction of mutations in humans.¹ Other recognized risk factors are family history of melanoma, presence of benign melanocytic naevi, xeroderma pigmentosum and immunodeficiency states. People who sun burn and freckle easily are also at increased risk.²

The skin is the most common site for melanoma. Extracutaneous sites such as the lightly pigmented areas of the conjunctiva, upper respiratory tract, oral mucosa, anogenital mucosa and other visceral sites are rarely affected.² Some investigators have stressed the need to define the geographical spread of the disease in view of the recognized regional differences in incidence.^{6,7} This study aims at identifying the pattern of malignant melanoma in Jos, a geographical highland area with an altitude of about 1650m above sea level,⁸ in order to compare the findings with other centres in Nigeria and elsewhere.

Materials and methods

In this 10-year retrospective study, we identified records of patients diagnosed as

cases of malignant melanoma between January 1989 and December 1998 at the pathology laboratory of Jos University Teaching Hospital (JUTH). The duplicate copies of the histology reports and the archival Haematoxylin and Eosin (H&E) stained slides were retrieved and reviewed. Fresh sections were taken and stained with H & E and Masson Fontana in the few cases where the original slides could not be retrieved. Histological staging was based on Clark's levels of invasion,² which are divided in to five categories (I-V) according to depth of dermal invasion. In level I tumours, the melanoma cells are confined to the epidermis (melanoma in-situ), while level V tumours demonstrate invasion of the subcutaneous fat.

The patient's age, sex, anatomical site of biopsy and other relevant information were extracted from the duplicate histology reports. The data were presented using tables and analyzed using relative frequency and group percentages.

Two patients who had previously been diagnosed with melanoma were on review found to have pigmented basal cell carcinoma and compound naevocellular naevus and hence were excluded.

Results

During the 10-year study period, a total of 182 histologically diagnosed skin cancers were recorded. There were 68 cases of malignant melanoma representing 37.4% of all skin cancers in JUTH. These comprised of 38 males and 30 females with a male to female ratio of 1.3:1. The age range was between 22 and 85 years with a mean of 50.4 years and a peak age at diagnosis (36.8% cases) in the 40-49 year age bracket (Table 1).

Table 2 shows the anatomical distribution of lesions. Fifty-Nine patients (82.4%) presented with foot lesions, majority sited on the volar aspect of the foot. Six patients (8.8%) had groin lesion

and 2 cases each had upper limb and conjunctival lesions.

All the cutaneous melanomas and the single vulva melanoma were of nodular type, while the others represented mucosal lesions (Table 3). There were no superficial spreading types. Clarke's level V was the commonest (Table 4).

Table 1. Age and sex distribution of malignant melanoma in Jos

Age (yrs)	M	F	Total (%)
20-29	2	-	2 (2.7)
30-39	4	4	8 (11.7)
40-49	14	11	25 (36.8)
50-59	5	6	11 (16.2)
60-69	7	5	12 (17.6)
70-79	3	2	5 (7.4)
80-89	3	2	5 (7.4)
Total	38	30	68 (100)

Table 2: Anatomical distribution of malignant melanoma in Jos

Site	No. (%)
Foot	59 (82.4)
Groin	6 (8.8)
Upper limb	2 (2.9)
Conjunctiva	2 (2.9)
Vulva	1 (1.5)
Oral mucosa	1 (1.5)
Total	68 (100)

Table 3: Histological types of malignant melanoma in Jos

Type	No. (%)
Nodular melanoma	65 (95.6)
Mucosal melanoma	3 (4.4)
Superficial spreading melanoma	- (0)
Total	68 (100)

Table 4: Clark's level of malignant melanoma in Jos

Level	No. (%)
I	0 (0)
II	0 (0)
III	5 (7.4)
IV	13 (19.1)
V	47 (69.1)
Unspecified	3 (4.4)
Total	68 (100)

Discussion

Malignant melanoma remains one of the most challenging malignant neoplasms, particularly in developing countries where majority of patients present with late stage disease. In this study, we recorded a total of 68 cases, representing one of the highest figures reported in any Nigerian series.^{7, 9, 12} The observed frequency is higher than what was reported by Adeyi¹² and Nggada⁷ in Lagos and Ife respectively, but similar to what obtains in Enugu¹⁰ another highland area suggesting an interesting epidemiological association related to high altitude.

The male to female ratio of 1.3:1 is also comparable to the 1.2:1 reported from Ife,⁷ in keeping with the overall slight male preponderance in most countries.² However, the reversed male/female ratio in the Enugu series¹⁰ has been attributed to the smaller number of cases studied by the authors. The rarity of the tumour before puberty suggests hormonal influences may be additional risk factors.^{6,13} Majority of our patients (70.6%) were in the fifth to seventh decades of life as is the observation in other Nigerian series^{7, 9, 10, 12} and the mean age of 50.4 years concords with the reported findings in Enugu and among Caucasians with nodular melanoma.^{10, 12}

An overwhelming majority of our patients (95.6%) presented with nodular foot lesions, which is the usual pattern

seen in Blacks and Asians. This form of melanoma, which has been associated with non-solar factors such as chronic trauma, has been found also to be surprisingly common in African – Americans and in Bantus resident in the urbanized townships of South Africa.⁶

Unlike the experience in Japan where mucosal melanomas constitute about 15% of all melanomas,² it was only 5.9% in this study. Only two of our patients had conjunctival affection. Olurin at the University College Hospital, Ibadan, has documented a similar paucity of conjunctival lesions.¹⁴ Other extracutaneous sites are known to be infrequently affected by melanoma especially in Blacks. One case each with oral and vulva lesions were recorded in the present study. Vulva melanoma, which is primarily a disease of older women, has a poorer prognosis than cutaneous melanoma and is amelanotic in 27% of cases.¹⁵ Three of the patients with groin affection were later found to have concomitant foot lesions, while the others had no other demonstrable cutaneous or extracutaneous primary site. It is our opinion that such cases represent metastasis to inguinal lymph nodes from a regressed primary foot lesion. This occurrence of lymph node metastasis with no apparent primary lesion occurs in approximately 4% of all cases, the most probable explanation for such, being the spontaneous regression of a cutaneous primary lesion, now inapparent.^{2,16,17}

Clark's levels of invasion are reported to be inversely correlated with survival rates.² This indicates a likely poor prognostic outcome in most of the cases in this study in view of the advanced histological stages at presentation. It also poses a great challenge for the health management team and offers little chances of achieving the cure that has remarkably improved survival rates in developed countries. This necessitates efforts to educate primary care physicians and the

general public about the distinctive clinical features of malignant melanoma and its precursor lesions. This will ensure early presentation, diagnosis and treatment with subsequent improvement in survival rates.

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